NON-PUBLIC?: N
ACCESSION #: 9206250076
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Sequoyah Nuclear Plant, Unit 1 PAGE: 1 OF 4

DOCKET NUMBER: 05000327

TITLE: Manual reactor Trip as a Result of a Secondary System Perturbation.
EVENT DATE: 05/16/92 LER #: 92-012-00 REPORT DATE: 06/15/92

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 082

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: J. W. Proffitt
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COMPONENT FAILURE DESCRIPTION:
CAUSE: X SYSTEM: SD COMPONENT: LCV MANUFACTURER: M121
REPORTABLE NPRDS: N

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On May 16, 1992, Unit 1 was manually tripped from 82 percent power as a result of a condensate and feedwater transient. The decision to manually trip the reactor was made by the shift operations supervisor. The equipment, required to operate after the reactor was manually tripped, performed as expected. The condensate transient was caused by a simultaneous loss of both No. 7 heater drain tank pumps (HDTPs). The cause of the trip of the No. 7 HDTPs was determined to be the failure of the No. 7 heater drain tank level control valve positioner. The level control valve positioner was repaired and returned to service.

END OF ABSTRACT

I. PLANT CONDITIONS

Unit 1 was in power operation at approximately 82 percent reactor thermal power.

II. DESCRIPTION OF EVENT

A. Event

On May 16, 1992, at 0407 Eastern daylight time (EDT), Unit 1 was manually tripped as a result of a secondary system perturbation. At approximately 0401 EDT, both No. 7 heater drain tank pumps (HDTPs) tripped off-line, causing a perturbation in the condensate system. After the loss of both the No. 7 HDTPs, Operations began to drop unit load (starting at 100 percent power) because of an anticipated low pressure heater string isolation on high high levels. The shift operations supervisor (SOS) directed the assistant shift operations supervisor (ASOS) to prepare for the manual reactor trip if the heaters isolated and caused a loss of condensate flow. Operations proceeded to attempt to reopen the low pressure heater isolation valves when they closed. However, after condensate flow dropped from 20,000 gallons per minute to 12,000 gallons per minute, and the unit was at approximately 84 percent power, it was determined that feedwater flow could not be maintained because of the low pressure heater isolation resulting in a loss of feedwater flow to the main feed pumps. The SOS directed that the unit be tripped. At 0407 EDT, Operations manually tripped the reactor.

B. Inoperable Structures, Components, or Systems That Contributed to the Event

None.

C. Dates and Approximate Time of Major Occurrences

1. May 16, 1992 Both of the Unit 1 No. 7 HDTPS tripped off-line.
at 0401 EDT

2. May 16, 1992 Unit 1 was manually tripped from 82 percent
at 0407 EDT power as a result of a secondary system
perturbation caused from the isolation of the
No. 7 heaters.

3. May 16, 1992 NRC was notified of the reactor trip.

at 0519 EDT

D. Other Systems or Secondary Functions Affected

None.

E. Method of Discovery

The No. 7 HDTPs trip was discovered during routine observations of plant parameters (i.e., No. 7 HDTP trip alarm) by main control room Operations personnel.

F. Operator Actions

When the No. 7 HDTPs tripped, Operations personnel were immediately dispatched to the No. 7 HDTPs to determine level and to verify position of the bypass valve. After both the A and B No. 7 HDTPs had tripped, the operators began decreasing load and the rod control system was placed in automatic. The operators anticipated the isolation of the low pressure heaters and were instructed to manually trip the reactor if this occurred. When the heaters isolated, the operator manually tripped the unit and entered the appropriate emergency instructions. The plant was subsequently placed in a stable condition.

G. Safety System Responses

As designed, the turbine tripped, following the reactor trip. Safety systems performed as expected.

III. CAUSE OF THE EVENT

A. Immediate Cause

The reactor was manually tripped as a result of a heater string isolation following a condensate and feedwater transient.

B. Root Cause

The root cause of this event has been attributed to failure of the No. 7 heater drain tank level control valve positioner in that 1-LCV-6-190A failed full open, resulting in a rapid loss of level in the No. 7 heater drain tank (HDT). The rapid loss

of level caused the level indicating controller to drive the bypass level control valve, 1-LCV-6-190B, further closed and caused the No. 7 HDTPs to trip. This resulted in a rapid increase of water level in the No. 7 HDT and isolation of the heater string since, as a result of the magnitude and rate of the level changes, 1-LCV-6-190B could not respond quickly enough to overcome the transient.

C. Contributing Factors

None.

IV. ANALYSIS OF EVENT

Plant equipment required to operate after the reactor was manually tripped performed as expected and plant parameters were within expected ranges. However, the steam generator PORVs did lift momentarily, with the Loop 2 PORV being the last to reseat. This did not challenge the safety analysis requirements. Therefore, the event did not adversely affect the health and safety of plant personnel or the public.

V. CORRECTIVE ACTION

A. Immediate Corrective Actions

After the reactor was manually tripped, the control room staff responded as prescribed by emergency procedures. They promptly diagnosed the plant conditions and took actions necessary to stabilize the unit in a safe condition.

B. Corrective Actions to Prevent Recurrence

1. The No. 7 HDT level control valve 1-LCV-6-190A was refurbished and returned to service. 1-LCV-6-190B was tested with no identified deficiencies.

VI. ADDITIONAL INFORMATION

A. Failed Components

The level control valve failure was attributed to the failure of the spring-loaded arm positioner. The positioner was repaired and the valve returned to service.

B. Previous Similar Events

A review of previously reported events identified four events (LERs 327/84031, 327/84032, 328/84015, and 328/85002) where a reactor trip occurred as result of fluctuations in feedwater flow from HDT level-control problems. Although these events involved level-control problems, the problems were not similar to the failure discussed in this LER. Therefore, the corrective action could not have prevented this event.

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J. L. Wilson

Vice President, Sequoyah Nuclear Plant

June 15, 1992

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 1 - DOCKET NO.
50-327 - FACILITY OPERATING LICENSES DPR-77 - LICENSEE EVENT REPORT (LER)
50-327/92012

The enclosed LER provides details concerning a manual reactor trip resulting from a secondary system perturbation. This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv) as an event that resulted in the manual actuation of engineered safety features, including the reactor protection system.

Sincerely,

J. L. Wilson

Enclosure
cc: See page 2

ATTACHMENT 1 TO 9206250076 PAGE 2 OF 2

U.S. Nuclear Regulatory Commission
Page 2
June 15, 1992

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